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FEASIBILITY OF ACTIVE COUNTERMEASURES FOR THERMAL RADIATION EFFECTS OF NUCLEAR WEAPONS. Final Report

TECHNICAL REPORT

· 01 July 1963

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[Goodale, T C](#); [Hawkins, M B](#); [Willoughby, A B](#)

The effectiveness and practicality of active countermeasures to the thermal effects of nuclear detonations were investigated. The use of smoke screens to attenuate the incident thermal radiation below damaging levels appeared to be the most practical countermeasure for large-area application. The investigation included review of available information on active countermeasures, study of radiation attenuation by individual particles and clouds of particles, study of the theory of smoke-producing reactions, development of preliminary smoke-screen system design procedures, and preliminary cost-effectiveness analyses of several candidate smoke-screen systems. The major conclusions are: (1) Smoke screens composed of absorbing particles appear to be more effective and less expensive than screens composed of scattering particles; (2) Effective screens can be produced and maintained under a wide variety of weather conditions; (3) Anticipated costs of smoke-screening systems are estimated to be as low as 0,000 per square mile; and (4) Wind-dispersed screens appear to be the most practical at present. Recommended are rapid development of prototype hardware for interim screening systems as well as a research and development program leading to screening systems with optimum performance for minimum cost. (auth)

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